

WATER DAMAGE ASSESSMENT

**Department of Environmental Protection
1 Winter Street, 4-6th floors
Boston, Massachusetts**



Prepared by:
Massachusetts Department of Public Health
Bureau of Environmental Health
Indoor Air Quality Program
October 2019

Background

Building:	Massachusetts Department of Environmental Protection (MDEP)
Address:	1 Winter Street, Floors 4 through 6, Boston
Assessment Requested by:	Brandon Perotto, Deputy Director of Facilities, Executive Office of Energy and Environmental Affairs (EEA)
Reason for Request:	Water damage following a flood
Date of Assessment:	September 26, 2019
Massachusetts Department of Public Health/Bureau of Environmental Health (MDPH/BEH) Staff Conducting Assessment:	Ruth Alfasso, Environmental Engineer/Inspector, Indoor Air Quality (IAQ) Program
Building Description:	Multi-story office building above The Corner Mall retail area and food court.
Windows:	Not openable

Introduction

DEP staff reported that water was released from the source side (white water) of a toilet in the women's restroom on the 6th floor on Monday September 16th. Over an inch of water flooded an area near the restroom on the 6th floor, which then traveled down to areas on the 5th and 4th floor.

According to facility staff, immediate response actions were conducted including: removal and replacement of moistened ceiling tiles on the 5th and 4th floors; moving furniture on the 6th floor as well as a few items on the 5th and 4th floor in the affected areas; using fans to assist with drying; and cleaning.

Note that this building has been visited by the DPH/IAQ program in the past. Reports from those visits are available by request.

Methods

Please refer to the IAQ Manual for methods, sampling procedures, and interpretation of results (MDPH, 2015). No testing of IAQ parameters was conducted during this visit. Visual observations were made of water-damaged materials, drying procedures being used, and other conditions that may impact IAQ. Some moisture measurements in gypsum wallboard and carpeting using a Delmhorst BD2100 contractor's moisture meter were conducted, as is discussed further below.

Results

Ventilation

A heating, ventilating and air conditioning (HVAC) system has several functions. First it provides heating and, if equipped, cooling. Second, it is a source of fresh air. Finally, an HVAC system will dilute and remove normally-occurring indoor environmental pollutants by not only introducing fresh air, but by filtering the airstream and ejecting stale air to the outdoors via exhaust ventilation. Even if an HVAC system is operating as designed, point sources of respiratory irritation may exist and cause symptoms in sensitive individuals.

To maximize air exchange, the MDPH recommends that both supply and exhaust ventilation operate continuously during periods of occupancy. In order to have proper ventilation with a mechanical supply and exhaust system, the systems must be balanced to provide an adequate amount of fresh air to the interior of a room while removing stale air from the room. It is recommended that HVAC systems be re-balanced every five years to ensure adequate air systems function (SMACNA, 1994). It is unknown when the last time this system was balanced.

Microbial/Moisture Concerns

No carpeting/flooring measured was wet during the assessment. A few areas of wallboard had elevated levels of moisture compared to unaffected areas, on the 6th floor directly adjacent to the men's and women's restrooms as well as a section of wall inside and next to the women's restroom on the 5th floor. The men's restroom on 5 could not be examined. A portion of coving

at the base of the wall in these areas could be slightly pulled away from the wall in these areas which is an additional indication that the wall is moistened.

Note that furniture (e.g., filing cabinets) were not removed during remediation on the 4th floor. Although accessible areas of carpeting measured as dry, and reportedly most furniture was protected before most of the water flowed into the area, there may be moistened carpeting beneath items which may lead to odors in the future.

The US Environmental Protection Agency (US EPA) and the American Conference of Governmental Industrial Hygienists (ACGIH) recommends that porous materials (e.g., wallboard, carpeting) be dried with fans and heating within 24 to 48 hours of becoming wet (US EPA, 2008; ACGIH, 1989). If porous materials are not dried within this time frame, mold growth may occur. As the sections of wall identified have remained moistened for more than 48 hours, it is possible that they may be colonized with mold and should be removed and replaced.

A musty odor was present in the interior stairwell between the 6th and 5th floors next to the restrooms. No obvious source of this odor could be identified. Materials in this stairwell appear to be all non-porous (floor tile, plaster walls and metal staircase). There is no supply or exhaust ventilation in this stairwell, so increasing ventilation in this area to remove any lingering odors may be difficult. If thorough cleaning and ventilation of the stairwell does not remove the odor, additional investigation may be needed.

Conclusions/Recommendations

Based on observations made during this visit, the following recommendations, which were made verbally at the time of the visit, are reiterated:

1. Replace moistened wallboard on the 6th and 5th floor adjacent to the restrooms as indicated during the visit.
2. Remediation activities that may be disruptive or produce dust and odors should be conducted during off-hours (evenings and weekends) to the greatest extent practical.
3. If any odors occur in the future from 4th floor carpeting underneath furniture, move furniture and replace carpet tile squares.
4. Deactivate or seal vents in areas of remediation if work is like to generate airborne dust/debris.

5. Clean surfaces in the stairwell with a mild detergent. If possible ventilate the stairwell, possibly during unoccupied periods to avoid disturbing occupants.
6. Thoroughly clean all areas/flat surfaces in the impacted locations with a high efficiency particulate arrestance (HEPA) filter equipped vacuum cleaner and wet-wiping after remediation work is completed.
7. If odors in the stairwell persist, the BEH/IAQ program may be able to assist further.
8. Refer to resource manual and other related IAQ documents located on the MDPH's website for further building-wide evaluations and advice on maintaining public buildings. These documents are available at: <http://mass.gov/dph/iaq>.

References

ACGIH. 1989. Guidelines for the Assessment of Bioaerosols in the Indoor Environment. American Conference of Governmental Industrial Hygienists, Cincinnati, OH.

MDPH. 2015. Massachusetts Department of Public Health. Indoor Air Quality Manual: Chapters I-III. Available at: <http://www.mass.gov/eohhs/gov/departments/dph/programs/environmental-health/exposure-topics/iaq/iaq-manual/>.

SMACNA. 1994. HVAC Systems Commissioning Manual. 1st ed. Sheet Metal and Air Conditioning Contractors' National Association, Inc., Chantilly, VA.

US EPA. 2008. "Mold Remediation in Schools and Commercial Buildings". Office of Air and Radiation, Indoor Environments Division, Washington, DC. EPA 402-K-01-001. September 2008. Available at: <http://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide>.